S/N 10/045,436

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	Kirkpatrick, et al.	Docket:	60027.0075US01/BS01302
Serial No.:	10/045,436		
Filed:	November 7, 2001		
Title:	REUSABLE ONLINE SURVEY ENGINE		

CERTIFICATE UNDER 37 CFR 1.8: The undersigned hereby certifies that this Transmittal Letter and the paper, as described herein, are being deposited via First Class Mail in an envelope addressed to: Box DAC, Assistant Commissioner for Patents, Washington, D.C. 20231, on March 11, 2002.

By: Leonard J. Hope
Leonard J. Hope

PETITION TO ESTABLISH FILING DATE OF APPLICATION PAPERS

Box DAC
Assistant Commissioner of Patents
Washington, D.C. 20231

Dear Sir:

In response to the Notice of Omitted Item(s) in a Nonprovisional Application Filed Under 37 C.F.R. §1.53(b) mailed February 19, 2002, and pursuant to 37 C.F.R. §1.53(e), the Applicants hereby petition to establish the filing date of page 19 of the specification as November 7, 2001. In the Notice of Omitted Items, it is alleged that page 19 of the application papers was omitted when filed. The Applicants contend, however, that a page 19 was included in the application papers as deposited with the United States Patent and Trademark Office on November 7, 2001. In support of this petition, the Applicants have enclosed:

1. Evidence indicating that page 19 of the specification is entitled to a November 7, 2001 filing date comprising a true and correct copy of the application

papers as deposited with the United States Patent and Trademark Office on November 7, 2001, which includes a page 19;

2. The fee as set forth in 37 C.F.R. §1.17(h) ($130.00); and
3. A copy of the Notice of Omitted Items in a Nonprovisional Application mailed February 19, 2002.

The true and correct copy of the application papers as filed indicates that a page 19 was submitted to the Patent Office when this application was filed. Accordingly, the Applicants hereby petition to establish the filing date of page 19 of the specification submitted herewith as November 7, 2001.

If there are any questions concerning this petition, please contact the undersigned at (404) 954-5056.

Respectfully submitted,

MERCHANT & GOULD

Leonard J. Hope

Date: March 11, 2002

Leonard J. Hope
Reg. No. 44,774

Merchant & Gould, LLC
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UNITED STATES PATENT AND TRADEMARK OFFICE

OFFICE OF PETITIONS

COMMISSIONER FOR PATENTS
UNITED STATES PATENT AND TRADEMARK OFFICE
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APPLICATION NUMBER	FILING/RECEIPT DATE	FIRST NAMED APPLICANT	ATTORNEY DOCKET NUMBER
10/045,436	11/07/2001	Mark A. Kirkpatrick	60027.0075US01/BS01302

CONFIRMATION NO. 9937

23552
MERCHANT & GOULD PC
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MINNEAPOLIS, MN 55402-0903

FORMALITIES LETTER

OC000000007497784

Date Mailed: 02/19/2002

NOTICE OF OMITTED ITEM(S) IN A NONPROVISIONAL APPLICATION

FILED UNDER 37 CFR 1.53(b)

A filing date has been accorded to the above-identified nonprovisional application papers; however, the following item(s) appear to have been omitted from the application:

- Page(s) **19** of the specification (description and claims).

I. Should applicant contend that the above-noted omitted item(s) was in fact deposited in the U.S. Patent and Trademark Office (USPTO) with the nonprovisional application papers, a copy of this Notice and a petition (and $130.00 petition fee *(37 CFR 1.17(h))*) with evidence of such deposit **must** be filed within **TWO MONTHS** of the date of this Notice. The petition fee will be refunded if is determined that the item(s) was received by the USPTO.

II. Should applicant desire to supply the omitted item(s) and accept the date that such omitted item(s) was filed in the USPTO as the filing date of the above-identified application, a copy of this Notice, the omitted item(s) (with a supplemental oath or declaration in compliance with 37 CFR 1.63 and 1.64 referring to such items), and a petition under 37 CFR 1.182 (with the $130.00 petition fee *(37 CFR 1.17(h))* requesting the later filing date **must** be filed within **TWO MONTHS** of the date of this Notice.

III. The failure to file a petition (and petition fee) under the above options (I) or (II) within **TWO MONTHS** of the date of this Notice (37 CFR 1.181(f)) will be treated as a constructive acceptance by the applicant of the application as deposited in the USPTO. **THIS TWO MONTH PERIOD IS NOT EXTENDABLE UNDER 37 CFR 1.136(a) or (b)**. In the absence of a timely filed petition in reply to this Notice, the application will maintain a filing date as of the date of deposit of the application papers in the USPTO, and original application papers (*i.e.*, the original disclosure of the invention) will include only those application papers present in the USPTO on the date of deposit.

In the event that applicant elects not to take action pursuant to options (I) or (II) above (thereby constructively electing option (III)), amendment of the specification to renumber the pages consecutively and cancel incomplete sentences caused by any omitted page(s), and/or amendment of the specification to cancel all references to any omitted drawing(s), relabel the drawing figures to be numbered consecutively (if necessary), and correct the references in the specification to the drawing figures to correspond with any relabelled drawing figures, is required. Any drawing changes should be accompanied by a copy of the drawing figures showing the proposed changes in red ink. Such amendment and/or correction to the drawing figures, if necessary, should be by way of preliminary amendment submitted prior to the first Office action to avoid delays in the prosecution of the application.

A copy of this notice MUST be returned with the reply.

Customer Service Center
Initial Patent Examination Division (703) 308-1202
PART 2 - COPY TO BE RETURNED WITH RESPONSE

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

COPY OF PAPERS ORIGINALLY FILED

Applicant: Mark A. Kirkpatrick, Wendy Jennings, and Dongbiao Zheng

Docket: 60027.0075US01/BS01302

Title: Reusable Online Survey Engine

CERTIFICATE UNDER 37 CFR 1.10
'Express Mail' mailing label number: EL 900437657 US
Date of Deposit: November 7, 2001
I hereby certify that this paper or fee is being deposited with the United States Postal Service 'Express Mail Post Office To Addressee' service under 37 CFR 1.10 and is addressed to the Commissioner for Patents, Washington, D.C. 20231.

By: Leonard J. Hope
Name: Leonard J. Hope

BOX PATENT APPLICATION
Commissioner for Patents
Washington, D.C. 20231

RECEIVED
MAR 25 2002
OFFICE OF PETITIONS

Sir:

We are transmitting herewith the attached:

- ☒ Transmittal sheet, in duplicate, containing Certificate under 37 CFR 1.10.
- ☒ Utility Patent Application: Spec. 14 pgs; 20 claims; Abstract 1 pg.
  The fee has been calculated as shown below in the 'Claims as Filed' table.
- ☒ 8 sheets of formal drawings
- ☒ Nonpublication Request under 37 CFR 1.213(a)
- ☒ A signed Combined Declaration and Power of Attorney
- ☒ Assignment of the invention to BellSouth Intellectual Property Corporation, Recordation Form Cover Sheet
- ☒ A check in the amount of $740.00 to cover the Filing Fee
- ☒ A check for $40.00 to cover the Assignment Recording Fee.
- ☒ Return postcard

CLAIMS AS FILED

Number of Claims Filed		In Excess of:		Number Extra		Rate		Fee
Basic Filing Fee								$740.00
Total Claims								
20	-	20	=	0	x	18.00	=	$0.00
Independent Claims								
3	-	3	=	0	x	84.00	=	$0.00
MULTIPLE DEPENDENT CLAIM FEE								$0.00
TOTAL FILING FEE								$740.00

Please charge any additional fees or credit overpayment to Deposit Account No. 13-2725. A duplicate of this sheet is enclosed.

By: Leonard J. Hope
Name: Leonard J. Hope
Reg. No.: 44,774
Initials: LJH

MERCHANT & GOULD P.C.
P.O. Box 2903, Minneapolis, MN 55402-0903
(612) 332-5300

COPY OF PAPERS
ORIGINALLY FILED

EL900437657US

Receipt is hereby acknowledged for the following in the U.S. Patent and Trademark Office:

Applicant : Mark A. Kirkpatrick, Wendy Jennings, and Dongbiao Zheng
Title: Reusable Online Survey Engine
Docket.: 60027.0075US01/BS01302
Express Mail No.: EL 900437657 US
Date of Deposit: November 7, 2001

- ☒ Transmittal sheet, in duplicate, containing Certificate under 37 CFR 1.10.
- ☒ Utility Patent Application: Spec. 14 pgs; 20 claims; Abstract 1 pgs.
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- ☒ Return postcard

Patent

LJH

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	Mark A. Kirkpatrick, Wendy Jennings, and Dongbiao Zheng		
Serial No.:	Not Yet Assigned		
Filed:	November 7, 2001	Docket:	60027.0075US01/BS01302
Title:	Reusable Online Survey Engine		

CERTIFICATE UNDER 37 CFR 1.10
'Express Mail' mailing label number: EL 900437657 US
Date of Deposit: November 7, 2001
I hereby certify that this paper or fee is being deposited with the United States Postal Service 'Express Mail Post Office To Addressee' service under 37 CFR 1.10 on the date indicated above and is addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.

By: Leonard J. Hope
Leonard J. Hope, Esq.

NONPUBLICATION REQUEST UNDER 37 C.F.R. §1.213(a)

Commissioner for Patents
Washington, D.C. 20231

Dear Sir:

The patent application identified above is not to be published under 35 U.S.C 122(b).

The undersigned hereby certifies that the invention disclosed in the patent application identified above has not been and will not be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication at eighteen months after filing.

Respectfully submitted,

MERCHANT & GOULD P.C.
P.O. Box 2903
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612.332.5300

Date: November 7, 2001

Leonard J. Hope

Name: Leonard J. Hope
Reg. No.: 44,774

REUSABLE ONLINE SURVEY ENGINE

Field of the Invention

The present invention relates to the field of online surveys. More particularly, but not by way of limitation, the present invention relates to the field of reusable software components for conducting surveys over a distributed computing network.

Background of the Invention

In order to effectively market products and services to consumers both on and off the World Wide Web (the "Web" or "WWW"), it is necessary to collect accurate and relevant information regarding consumers and their purchasing habits. One way that Web sites have traditionally collected information is through the use of Web survey applications. Web survey applications conduct online surveys by providing a user with an input form that includes a number of questions along with input fields in which to provide answers to the questions. The user may then answer the survey by typing an answer for each question into the input fields. When the user has completed the survey, the user may transmit the provided answers back to the Web survey application. The survey answers may then be utilized, along with other user's answers to the survey, to better market the concerned product or service.

While Web survey applications are able to gather a great deal of information from a user, they are not without their drawbacks. The main drawback associated with Web survey applications stems from the fact that the lifetime of the Web survey application and the survey questions themselves are frequently different. For instance, a marketing group may provide a Web site that includes a survey for a particular type of product. The survey may include questions on customer satisfaction with the particular product and may be utilized for 90 days. After the survey is completed, the marketing group may wish to change the survey questions to focus on another type of product for a different time period. Changing the survey questions, however, can be very time consuming and expensive.

With prior art Web survey applications it is very difficult to change the application to provide a new set of survey questions. In particular, changing survey questions typically requires writing new application code to support the new questions, testing the new application code, and then deploying the new application code. This process be time consuming and expensive. What is needed, therefore, in light of these problems, is a Web survey engine that is reusable and that does not require program code to be modified in order to implement a new Web survey.

Summary of the Invention

The present invention solves the above-described problems by providing a method, computer system, and computer-readable medium for conducting an online survey that advantageously does not require the modification of program code in order to implement a new survey.

Generally described, the present invention comprises a computer system for conducting an online survey including one or more questions. A survey database maintains the survey questions and data identifying the type of input field that should be provided for responding to each question. When a request is received for a network resource, such as a Web page, referencing the online survey, the contents of the survey database are utilized to generate displayable content for conducting the online survey. The survey questions are maintained in the survey database separately from the application code for displaying the survey questions. Therefore, only the questions in the survey database need to be modified to provide a new survey. The application code for generating the survey is generic to all surveys and does not need to be modified.

More specifically described, the present invention provides a computer system for generating an online survey. The computer system comprises a survey database that contains questions to be utilized in the survey and data identifying the type of input field corresponding to each question. The survey database also includes data that describes how each input field should be displayed. The survey database may also include data identifying the ordering sequence of the questions and data indicating whether particular questions should be included or excluded from a given survey. The

survey database may also include data identifying a corresponding application, form name, and version number.

The computer system provided herein also comprises a network resource for generating the content necessary to conduct the survey and a software component for receiving and responding to requests for the network resource. When a request for the network resource is received, the software component compiles an executable class file capable of generating the content necessary to display the questions and input fields in a Web browser. The survey database, including the questions, input field types, and sequence information, is utilized to generate the class file. The software component then executes the class file and returns the resulting content as a response to the request for the network resource. In this manner, the online survey questions may be displayed in a Web browser with corresponding input fields. When the input fields have been populated with response data, the response data may be submitted to the software component for storage in a response table.

According to one actual embodiment of the present invention, the software component may determine whether a previously compiled version of the class file should be utilized to respond to the request for the network resource. If the request for the network resource is a first request for the network resource, a previously compiled version of the class file will not be utilized. Additionally, if the software component was reset since the previous access of the network resource was accessed, the previously compiled class file will not be utilized. Otherwise, the previously compiled class file will be utilized, thereby providing a faster response to the request for the network resource.

The present invention also provides an apparatus and computer-readable medium for providing a reusable online survey engine. Additional details regarding the present invention will be provided in the detailed description that follows.

Brief Description of the Drawings

FIGURE 1 is a network architecture diagram showing an illustrative operating environment for an actual embodiment of the present invention;

FIGURE 2 is a block diagram showing an illustrative hardware architecture for a Web server computer utilized in an actual embodiment of the present invention;

FIGURE 3 is a block diagram showing the format and contents of an illustrative survey database utilized in an actual embodiment of the present invention;

FIGURE 4 is a screen diagram illustrating a web browser screen display including an illustrative web survey produced by an actual embodiment of the present invention;

FIGURE 5 is a block diagram showing the format and contents of an illustrative response table utilized in an actual embodiment of the present invention;

FIGURE 6 is a flow diagram showing an illustrative routine for processing a request for a network resource that includes an electronic survey according to an actual embodiment of the present invention;

FIGURE 7 is a flow diagram showing an illustrative routine for compiling a network resource that includes an electronic survey according to an actual embodiment of the present invention; and

FIGURE 8 is a flow diagram showing an illustrative routine for processing a request to submit the results of a completed survey form according to an actual embodiment of the present invention.

Detailed Description of the Preferred Embodiment

The present invention is directed to a method, computer system, and computer-readable medium for providing a reusable online survey engine. Aspects of the present invention may be embodied in an executable software component for providing the functionality described herein. Additionally, aspects of the present invention may be embodied in software components utilized in conjunction with a Web server application program, such as the IPLANET WEB SERVER, provided by IPLANET E-COMMERCE SOLUTIONS – A SUN | NETSCAPE ALLIANCE, of Palo Alto, California.

Referring now to the figures, in which like numerals represent like elements, an actual embodiment of the present invention will be described. Although aspects of the invention will be described in the general context of an application program that executes on an operating system in conjunction with a server computer, those skilled in

the art will recognize that the invention also may be implemented in combination with other program modules. Generally, program modules include routines, programs, components, data structures, and the like, that perform particular tasks or implement particular abstract data types. Moreover, those skilled in the art will appreciate that the invention may be practiced with other computer system configurations, including hand-held devices, multiprocessor systems, microprocessor-based or programmable consumer electronics, minicomputers, mainframe computers, and the like. Although the invention is also described as being practiced in distributed computing environment, where tasks are performed by remote processing devices that are linked through a communications network, other possible implementations should be apparent to those skilled in the art.

Referring now to FIGURE 1, an illustrative operating environment for an embodiment of the present invention will be described. Aspects of the present invention are implemented as an executable software component executing on a server computer, such as Web server computers 6A-6N, accessible via a distributed computing network, such as the Internet 4. As is well known to those skilled in the art, the Internet 4 comprises a collection of networks and routers that use the Transmission Control Protocol/Internet Protocol ("TCP/IP") to communicate with one another. The Internet typically includes a plurality of local area networks ("LANs") and wide area networks ("WANs") that are interconnected by routers. Routers are special purpose computers used to interface one LAN or WAN to another. Communication links within the LANs may be twisted wire pair, or coaxial cable, while communication links between networks may utilize 56 Kbps analog telephone lines, 1 Mbps digital T-1 lines, 45 Mbps T-3 lines or other communications links known to those skilled in the art. Furthermore, computers, such as client computer 2, and other related electronic devices can be remotely connected to either the LANs or the WANs via a permanent network connection or via a modem and temporary telephone link. It will be appreciated that the Internet 4 comprises a vast number of such interconnected networks, computers, and routers.

A client computer 2 capable of executing a Web browser application program (not shown), such as Microsoft® Internet Explorer, may be utilized to transmit a request for a Web page or other type of network resource to one of the Web server computers 6A-6N. As is well known to those skilled in the art, the Web is a vast collection of interconnected network resources, including "hypertext" documents

written in Hypertext Markup Language ("HTML"), or other markup languages, that are available from "Web sites" accessible through the Internet 4. A Web site is provided by a Web server computer, like Web server computers 6A-6N, connected to the Internet 4, that has mass storage facilities for storing such network resources, and that executes administrative software for handling requests for the network resources.

Large-scale Web sites are typically implemented utilizing a two-tier computer systems architecture as shown in FIGURE 1. The first tier typically comprises one or more "front-end" Web server computers, like Web server computers 6A-6N, that receive and process live requests for network resources from client computers 2 connected to the Internet 4. As is well known to those skilled in the art, the first tier Web servers are frequently connected to the Internet 4 through a load balancing device 5, such as the Local Director™ from Cisco Systems®. The load balancing device 5 intercepts requests intended for one of the Web server computers 6A-6N, and forwards each request to a Web server computer that has computing resources available to respond to the request. In addition to the Web server computers 6A-6N, a large-scale Web site may also include a "back-end" server computer (not shown) that stores network resources that may be served to client computer 2 by one of the Web server computers 6A-6N. Additional details regarding the operation of the Web server computers 6A-6N will be provided below with respect to FIGURES 2-8.

Referring now to FIGURE 2, a hardware architecture for an illustrative Web server computer 6 will be described. The Web server computer 6 comprises a general purpose server computer for receiving and responding to Hypertext Transfer Protocol ("HTTP") requests as known to those skilled in the art. The Web server computer 6 comprises a conventional server computer, including a central processing unit 8, a system memory 12, and a system bus 10 that couples the system memory 12 to the processing unit 8. The Web server computer 6 also typically includes at least some form of computer-readable media.

Computer-readable media can be any available media that can be accessed by the Web server computer 6. By way of example, and not limitation, computer-readable media may comprise computer storage media and communication media. Computer storage media includes volatile and nonvolatile, removable and non-removable media implemented in any method or technology for storage of information such as computer readable instructions, data structures, program modules or other data. Computer storage media includes, but is not limited to, random access memory ("RAM"), read only

memory ("ROM"), EPROM, EEPROM, flash memory or other solid-state memory technology, CD-ROM, digital versatile disks ("DVD") or other optical storage, magnetic cassettes, magnetic tape, magnetic disk storage or other magnetic storage devices, or any other medium which can be used to store the desired information and which can be accessed by the Web server computer 6.

According to an embodiment of the present invention, the system memory 12 includes a ROM 16 and a RAM 14. A basic input/output system ("BIOS") (not shown), containing the basic routines that help to transfer information between elements within the Web server computer 6, such as during start-up, is stored in the ROM 16. The Web server computer 6 further includes a mass storage device 22, such as a hard disk drive, a magnetic disk drive, e.g., to read from or write to a removable disk, or an optical disk drive, e.g., for reading a CD-ROM disk or to read from or write to other optical media such as a DVD. The Web server computer 6 may include a combination of such mass storage devices. The mass storage device 22 is connected to the system bus 10 through a mass storage device interface (not shown).

As described above with respect to FIGURE 1, the Web server computer 6 operates in a networked environment. According to an embodiment of the invention, the Web server computer 6 communicates with the client computer 2 over the Internet 4. The Web server computer 6 connects to the Internet 4 through a network interface unit 18. It should be appreciated that the network connections shown are illustrative and other means of establishing a communications link between the Web server computer 6 and the Internet 4 may be utilized.

A user may control the operation of the Web server computer 6 through traditional input devices such as a keyboard or a mouse. These and other input devices may be connected to the central processing unit 8 through an input/output controller 20 that is coupled to the system bus 10. A monitor (not shown) or other type of display device may also be connected to the system bus 10 via a video display interface (not shown). Additionally, the Web server computer 6 may include other peripheral output devices, such as a printer.

A number of program modules may be stored in the mass storage device 22 and RAM 14, including an operating system 24 suitable for controlling the operation of a server computer, such as the SOLARIS operating system from SUN MICROSYSTEMS of Palo Alto, California. Additionally, a Web server application program 26 may be stored in the mass storage device 22 and the RAM 30, such as the IPLANET WEB

SERVER, provided by IPLANET E-COMMERCE SOLUTIONS – A SUN | NETSCAPE ALLIANCE, of Palo Alto, California. As known to those skilled in the art, the Web server application program 26 is operative to receive HTTP requests through the network interface 18 and to respond to those requests. Typically, an HTTP request will take the form of a request for a network resource such as a JAVA server page ("JSP") page, a page encoded in HTML, a graphics file, or another application program stored at, or accessible to, the Web server computer 6.

In conjunction with the Web server application 26, the Web server computer 6 may also maintain a JAVA runtime extension package 28 that supports the use of JAVA servlets and JSP pages on the Web server computer 6. The JAVA runtime extension package 28 comprises a JAVA virtual machine 30 which includes a servlet engine 32 and a JSP engine 34. As known to those skilled in the art, JAVA servlets are programs written in the JAVA programming language from SUN MICROSYSTEMS that execute on a server computer as opposed to a client computer. The JAVA virtual machine 30 interprets JAVA programs that have been compiled into byte-code and stored in a class file.

JSP pages provide a simplified way to create Web pages that display dynamically-generated content. JSP pages utilize extensible markup language ("XML") tags and scriptlets written in JAVA to encapsulate the logic that generates the content for the page. JSP passes any formatting tags directly back to the response page. In this way, JSP pages separate the page logic from its design and display. More specifically, JSP pages are created to include JSP technology-specific tags, declarations, and possibly scriptlets, in combination with other static (HTML or XML) tags. The JSP engine 34 interprets the tags and scriptlets contained in a JSP page and generates a class file which, when interpreted by the servlet engine 32, generates and returns the desired content. A JSP page may include calls to JAVA code 36, JAVABEANS components, the JAVA Database Connectivity ("JDBC") application programming interface, or other types of components. A JSP page may also include a file. A JSP page has the extension ".jsp," which signals to the Web server application 26 that the JSP engine 34 will process elements on the page.

The Web server computer 6 also maintains a survey JSP page 42 on the mass storage device 22. Using the above-described process for executing JSP, the survey JSP page 42 generates the content for an online survey. As will be described in greater detail below with respect to FIGURES 6-8, the survey JSP page 42 utilizes a survey

database 38 to generate content for displaying the survey questions and input fields. The survey JSP page 42 also utilizes a response table 40 to save responses to the online survey. Additional details regarding the format and structure of the survey database 38 and the response table 40 are described below with reference to FIGURES 3 and 5, respectively.

Those skilled in the art should appreciate that although the present invention is described herein as being implemented using JSP pages, other technologies for dynamically generating content may be utilized to implement the present invention. For instance, Active Server Pages ("ASP") from MICROSOFT CORPORATION of Redmond, Washington, could be utilized to implement the present invention. Those skilled in the art should also appreciate that although the present invention is described in the context of a Web server application, an application server may also be utilized to provide the functionality described herein.

Turning now to FIGURE 3, the format and contents of the survey database 38 will be described. As discussed briefly above, the survey database 38 is utilized by the survey JSP page 42 to generate the content necessary for conducting an online survey. The survey database 38 defines the content of the online survey and describes how the content should be displayed. In particular, the survey database 38 contains a question field 44D that contains the questions that may be utilized in the online survey. For each question present in the question field 44D, an entry is also provided in a response type field 44F and a response parameters field 44G. The response type field 44E comprises data indicating what type of input field should be generated for each question. For instance, the response type field 44E may indicate that a text field for entering numbers, words, or other small pieces of text, a text area field for free-form, multi-line text entries, a radio button for picking one item in a list, or other type of input field should be displayed. The response parameters field 44G includes data indicating how the input field corresponding to each question should be displayed. For instance, an entry in the response parameters field 44G corresponding to a text field may indicate that a specified number of characters be provided in the text field. Similarly, an entry in the response parameters field 44G corresponding to a text area input field may indicate that a specified number or rows and columns be displayed for text entry. Likewise, an entry in the response parameters field 44G corresponding to a radio button may provide the

response corresponding to the button, such as "yes" or "no." Other response fields and response parameters known to those skilled in the art may be utilized in addition to those described here and shown in FIGURE 3.

The survey database 38 may also include an "active?" field 44n that indicates whether or not a particular question should be included in the survey. The survey database 38 may also include a sequence field 44e that indicates the ordering sequence for the questions. The survey database 38 may further include an application name field 44A identifying a software application associated with the questions, a form name field 44B identifying a particular Web form associated with the question, and a version field 44C identifying a version for the survey. Through the use of these fields, only questions associated with a particular application, form, or version may be selected for use with a particular online survey.

Referring now to FIGURE 4, an illustrative screen display showing a Web page generated by a software component provided in actual embodiment of the present invention will be described. FIGURE 4 shows a Web browser window 46 displaying a Web page generated by the present invention based upon the illustrative contents of the survey database 38 shown in FIGURE 3. In particular, the Web browser window 46 includes questions 48A-48N corresponding to the questions stored in the question field 44D. Likewise, the Web browser window 46 has response fields 50A-50N generated based upon the contents of the response type field 44F and the response parameters field 44G for each question. For instance, the response field 50A is eight characters wide, the response field 50B is ten characters wide, and the response field 50 is 80 characters wide and three rows high. Additionally, the questions 48A-48N are presented in the order specified by the sequence field 44E and only those questions identified as displayable in the "active?" field 44N are displayed. An illustrative routine for generating the content necessary to create the contents of the Web browser window 46 will be described below with reference to FIGURES 6 and 7.

Referring now to FIGURE 5, an illustrative response table 40 will be described. As mentioned briefly above, the response table 40 is utilized to store the responses provided as answers to the survey questions. The response table 40 includes an

application name field 50A that identifies the survey application with which the questions are associated. Similarly, the response table 40 includes a form name 50B that identifies a particular Web form associated with the survey and a version field 50C that identifies the version number of the survey. The survey table 40 also includes a question field 50D that stores a question and a response field 50N that stores the response 52 associated with the question. In this manner, the responses provided by one or more users to a survey may be stored in a single table, or database, and sorted or analyzed together.

Referring now to FIGURE 6, an illustrative Routine 600 will be described for processing a request for a network resource that includes an electronic survey. As described briefly above, the survey JSP page 42 contains program code necessary to generate the content for displaying the online survey from the contents of the survey database 38. The Routine 600 begins a block 600 where a request for the survey JSP page 42 is received at the Web server computer 6 from a Web browser application executing on a client computer 2. The Routine 600 then continues from block 602 to block 604, where a determination is made as to whether a previously compiled class file should be utilized to respond to the request for the survey JSP page 42. As mentioned above, a JSP page is compiled into an executable class file by the JSP engine 34. The class file may then be interpreted by the JAVA virtual machine 30 and its output returned in response to the request for the JSP page.

A previously compiled class file would therefore not be available if the request for the survey JSP page 42 is the first such request. Additionally, a previously compiled class file will not be utilized if the Web server application 26 has been reset since the previous request for the survey JSP page 42. Accordingly, if the request for the survey JSP page 42 is the first such request or if the Web server application 26 has been reset since the last access of the survey JSP page 42, the Routine 600 continues to block 608. If these conditions are not met, the Routine 600 branches to block 606, where the previously compiled class file associated with the survey JSP page 42 is retrieved. The Routine 600 then continues from block 606 to block 610.

At block 608, the survey JSP page 42 is compiled into a class file that may be interpreted by the JAVA virtual machine 30 to respond to the request for the survey JSP page 42. An illustrative Routine 700 is described below for compiling the survey JSP page 42 into byte-code compatible with the JAVA virtual machine 30. From blocks 608 and block 606, the Routine 600 continues to block 610 where either the previously compiled class file or the recently compiled class file are executed by the JAVA virtual machine 30. Markup language content capable of being displayed in a Web browser is generated when the class file is executed. This content generates the questions and input fields as specified in the survey database 38.

At block 612, the content generated by the execution of the class file, including the survey questions and response fields, is transmitted in response to the request for the survey JSP page 42. This content may then be displayed in a Web browser. The response fields may be completed by a user and the response data transmitted back to the Web server application 26. An illustrative Routine 800 for receiving and processing the response data is described below with reference to FIGURE 8. The Routine 600 continues from block 612 to block 614, where it ends.

Turning now to FIGURE 7, an illustrative Routine 700 will be described for compiling the survey JSP page 42 into byte-code compatible with the JAVA virtual machine 30. The Routine 700 begins at block 702, where code is generated for any static markup language found within the survey JSP page 42. Generally, this process involves simply passing the static HTML or XML directly through to the compiled code. From block 700 the Routine 700 transitions to block 704, where the first question for the identified survey is retrieved from the survey database 38. The Routine 700 then continues to block 706, where a determination is made as to whether the question is active and should be included in the survey. The "active?" field 44N for the current question is consulted to make this determination. If the current question should not be included in the survey, the Routine 700 branches to block 712.

If, at block 706, it is determined that the current question should be included in the survey, the Routine 700 continues to block 708. At block 708, code is generated for displaying the question and the associated response field. In order to generate this code,

the question field 44D, response type field 44F, and response parameter field 44G associated with the question may be utilized. Once the code has been generated for the current question and response field, the Routine 700 continues to block 710, where a determination is made as to whether more questions are contained in the survey database 38 for the identified survey. If additional questions remain, the Routine 700 branches to block 712, where the next question is retrieved, and to block 710 where code for the question is generated. If no additional questions remain, the Routine 700 continues to block 714.

At block 714, code for generating the questions and response fields may be reordered so that the questions and response fields are generated in a sequence as specified by the sequence field 44E of the survey database 38. The Routine 700 then continues to block 716, where the completed JAVA class file is saved. When executed by the JAVA virtual machine 30, the class file will generate the markup language code necessary to display the questions and response fields in a Web browser. From block 716, the Routine 700 continues to block 718, where it returns to block 610, described above with respect to FIGURE 6. The processing illustrated at blocks 704, 706, 708, 710, and 712 may be performed by making a call to an external database.

Referring now to FIGURE 8, an illustrative Routine 800 will be described for processing a request to submit the results of a completed survey form according to one actual embodiment of the present invention. When a user has completed the survey by providing answers to each of the survey questions in the response fields, the user may select a "submit" button to submit the results of the survey to the Web server application 26. The Routine 800 begins at block 802, where such a request to submit the response data is received. The submit request will include data identifying the questions, the response data corresponding to each question and response field, and the application name, form name, and version number for the survey. Once this information has been received, the Routine 800 will continue to block 804, where the survey response data will be stored in the response table 40. The Routine 800 then continues to block 806, where it ends.

Based upon the foregoing, it should be appreciated that the present invention provides a method, computer system, and computer-readable medium for conducting an online survey. Moreover, the above specification, examples and data provide a complete description of the manufacture and use of the composition of the invention. Since many embodiments of the invention can be made without departing from the spirit and scope of the invention, the invention resides in the claims hereinafter appended.

WE CLAIM:

1. A method for conducting an online survey having one or more questions, said method comprising:

maintaining a survey database, said database comprising said one or more questions and data identifying a type of input field for each question;

receiving a request for a network resource including said electronic survey;

in response to said request, determining whether a previously compiled class file should be utilized to respond to said request;

in response to determining that a previously compiled class file should not be utilized to respond to said request, creating an executable class file capable of generating markup language for displaying said questions and said input fields in a web browser;

generating said markup language by executing said class file; and

returning said markup language as a response to said request for a network resource.

2. The method of Claim 1, wherein determining whether a previously compiled class file should be utilized comprises determining whether said request for said network resource was a first request for said network resource.

3. The method of Claim 1, wherein determining whether a previously compiled class file should be utilized comprises determining whether said request for said network resource was a first request for said network resource or whether a web server operative to provide said network resource was reset since the last time said network resource was accessed.

4. The method of Claim 1, wherein said survey database further comprises data indicating how said input fields for each question should be displayed.

5. The method of Claim 4, wherein said survey database further comprises data indicating a sequence for said one or more questions and wherein said one or more questions are ordered according to said sequence when said class file is executed.

6. The method of Claim 5, wherein said survey database further comprises data indicating whether each of said one or more questions should be included in said electronic survey and wherein said class file does not generate markup language for each of said one or more questions not to be included in said survey when executed.

7. The method of Claim 6, wherein said survey database further comprises an application name corresponding to said electronic survey, a form name, and a version number.

8. The method of Claim 7, wherein said request is received at a web server computer maintaining said network resource from a web browser.

9. The method of Claim 8, wherein said web server computer is operative to receive response data corresponding to said input fields and to store said response data in a database.

10. A computer system for conducting an online survey comprising one or more questions, said computer system comprising:

a survey database comprising said one or more questions and data identifying a type of input field for each question;

a network resource including said electronic survey; and

a software component for receiving and responding to requests for said network resource, said software component operative to determine whether a previously compiled class file should be utilized to respond to a request for said network resource, to create an executable class file capable of generating markup language for displaying said questions and said input fields in a web browser in response to determining that a previously compiled class file should not be utilized, to execute said class file, and to

respond to said request with said markup language generated by the execution of said class file.

11. The computer system of Claim 10, wherein determining whether a previously compiled class file should be utilized comprises determining whether said request for said network resource was a first request for said network resource or whether said software component was reset since a previous request for said network resource.

12. The computer system of Claim 11, wherein said survey database further comprises data indicating how said input fields for each question should be displayed.

13. The computer system of Claim 12, wherein survey database further comprises data indicating a sequence for said one or more questions and wherein said one or more questions are ordered according to said sequence when said class file is executed.

14. The computer system of Claim 13, wherein said survey database further comprises data indicating whether each of said one or more questions should be included in said electronic survey and wherein said class file does not generate markup language for each of said one or more questions not to be included in said survey when executed.

15. A computer-readable medium comprising computer-readable instructions which, when executed by a computer, cause the computer to:

determine whether a request has been received for a network resource that includes an electronic survey;

in response to determining that a request for said network resource has been received, determining whether a previously compiled class file should be utilized to respond to said request;

in response to determining that a previously compiled class file should not be utilized, creating an executable class file capable of retrieving one or more questions and corresponding input fields from a survey database and generating content capable of displaying said questions and said input fields in a web browser; and

executing said class file and transmitting said content generated by said class file in response to said request.

16. The computer-readable medium of Claim 15, further comprising computer-readable instructions which, when executed by a computer, cause the computer to:

execute said previously compiled class file in response to determining that said previously compiled class file should be utilized and responding to said request with content generated by said previously compiled class file.

17. The computer-readable medium of Claim 16, further comprising computer-readable instructions which, when executed by a computer, cause the computer to:

utilize said previously compiled class file if said request for said network resource is not a first request for said network resource and if a software component for receiving said request has not been reset since a previous request for said network resource.

18. The computer-readable medium of Claim 17, further comprising computer-readable instructions which, when executed by a computer, cause the computer to:

retrieve data from said survey database indicating whether each of said one or more questions should be included in said response to said request; and to

create said class file in such a manner as to cause said class file only to generate content for displaying each of said one or more questions to be included in said response.

REUSABLE ONLINE SURVEY ENGINE

Abstract

A computer system, method, and computer-readable medium for conducting an online survey including one or more questions are provided. A survey database contains the survey questions and data identifying the type of input field that should be provided for responding to each question. When a request is received for a network resource referencing the online survey, the contents of the survey database are utilized to generate the online survey. The survey questions are maintained in the survey database separately from the application code for displaying the survey questions. Only the questions in the survey database need to be modified to provide a new survey. The application code for generating the survey is generic to all surveys and does not need to be modified.

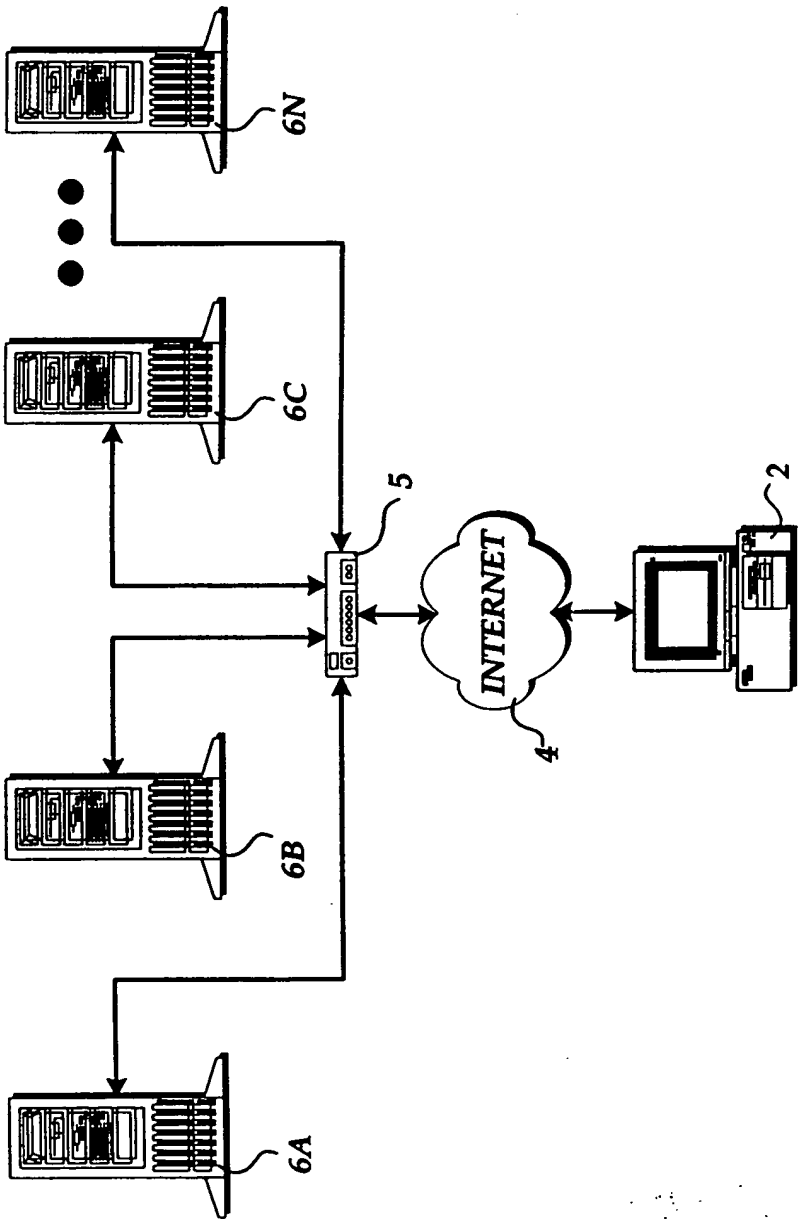

Fig.1.

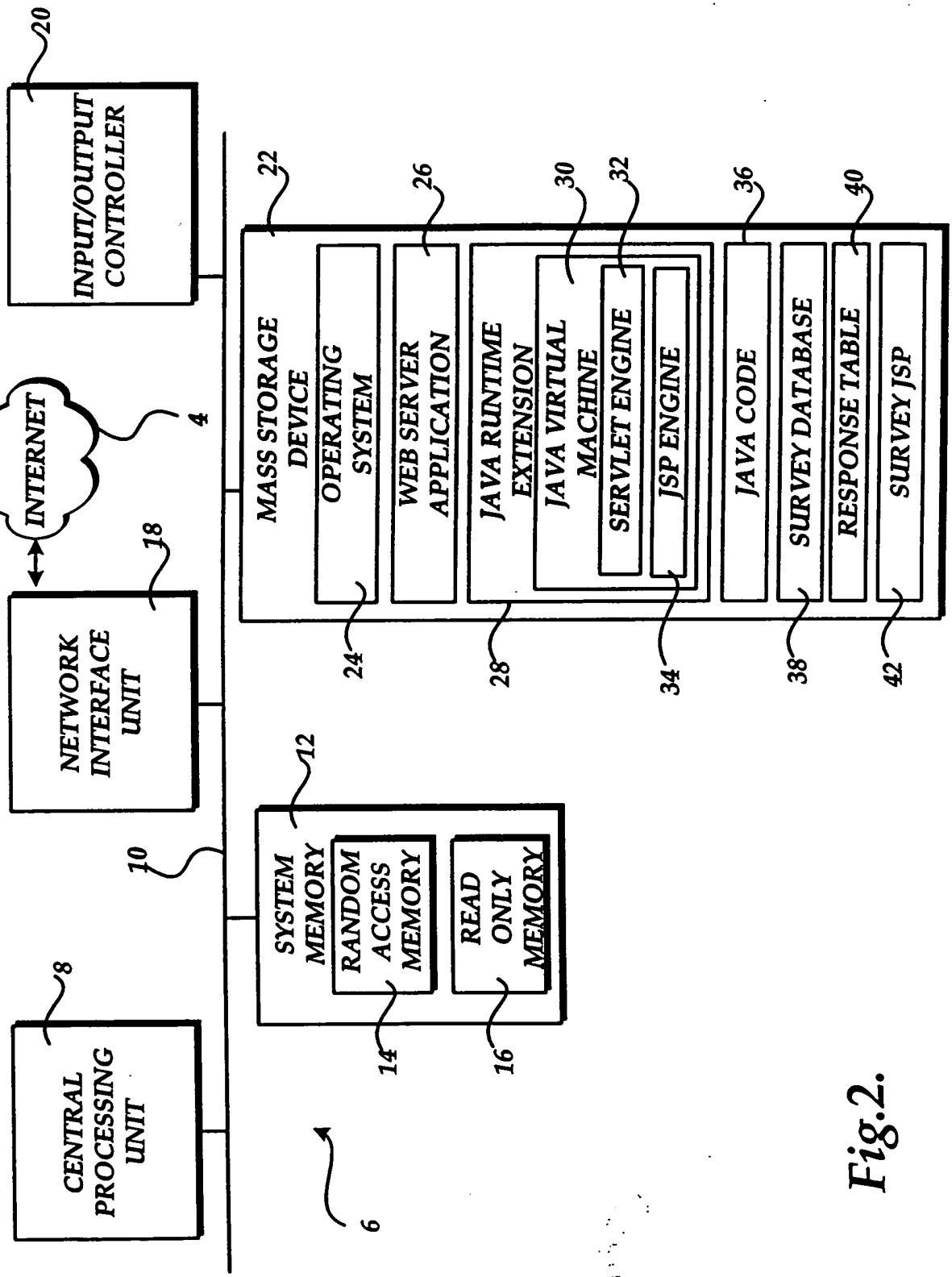
INPUT/OUTPUT CONTROLLER
20
INTERNET
4
NETWORK INTERFACE UNIT
18
CENTRAL PROCESSING UNIT
8
10
SYSTEM MEMORY
12
RANDOM ACCESS MEMORY
14
READ ONLY MEMORY
16
6
MASS STORAGE DEVICE
22
OPERATING SYSTEM
24
WEB SERVER APPLICATION
26
JAVA RUNTIME EXTENSION
28
JAVA VIRTUAL MACHINE
30
SERVLET ENGINE
32
JSP ENGINE
34
JAVA CODE
36
SURVEY DATABASE
38
RESPONSE TABLE
40
SURVEY JSP
42

Fig.2.

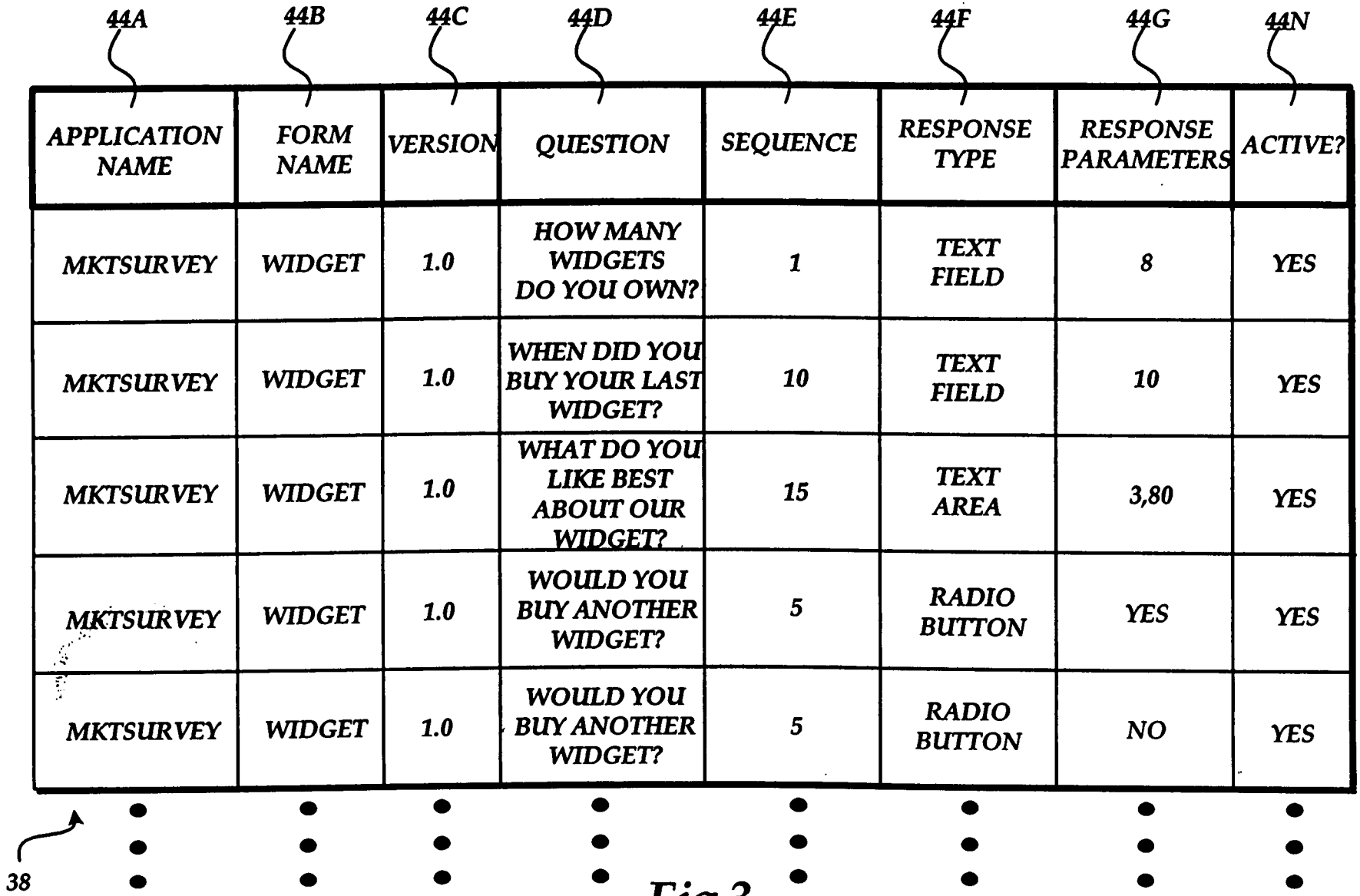
44A
44B
44C
44D
44E
44F
44G
44N
APPLICATION NAME
FORM NAME
VERSION
QUESTION
SEQUENCE
RESPONSE TYPE
RESPONSE PARAMETERS
ACTIVE?
MKTSURVEY
WIDGET
1.0
HOW MANY WIDGETS DO YOU OWN?
1
TEXT FIELD
8
YES
MKTSURVEY
WIDGET
1.0
WHEN DID YOU BUY YOUR LAST WIDGET?
10
TEXT FIELD
10
YES
MKTSURVEY
WIDGET
1.0
WHAT DO YOU LIKE BEST ABOUT OUR WIDGET?
15
TEXT AREA
3,80
YES
MKTSURVEY
WIDGET
1.0
WOULD YOU BUY ANOTHER WIDGET?
5
RADIO BUTTON
YES
YES
MKTSURVEY
WIDGET
1.0
WOULD YOU BUY ANOTHER WIDGET?
5
RADIO BUTTON
NO
YES
38

Fig.3.

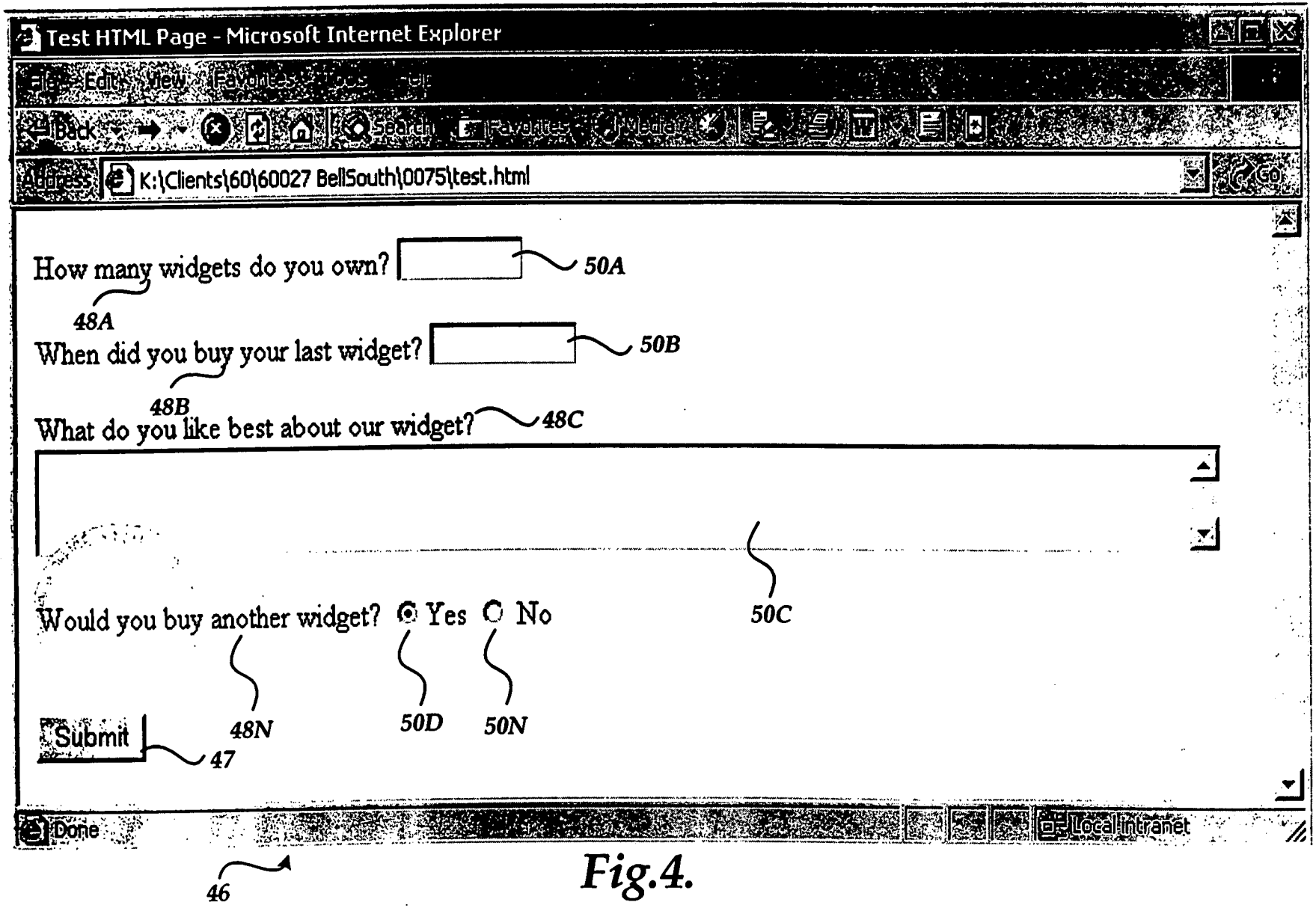
Test HTML Page - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Search Favorites Media
Address K:\Clients\60\60027 BellSouth\0075\test.html
Go
How many widgets do you own?
50A
48A
When did you buy your last widget?
50B
48B
What do you like best about our widget?
48C
50C
Would you buy another widget? Yes No
48N
50D
50N
Submit
47
Done
Local intranet
46

Fig.4.

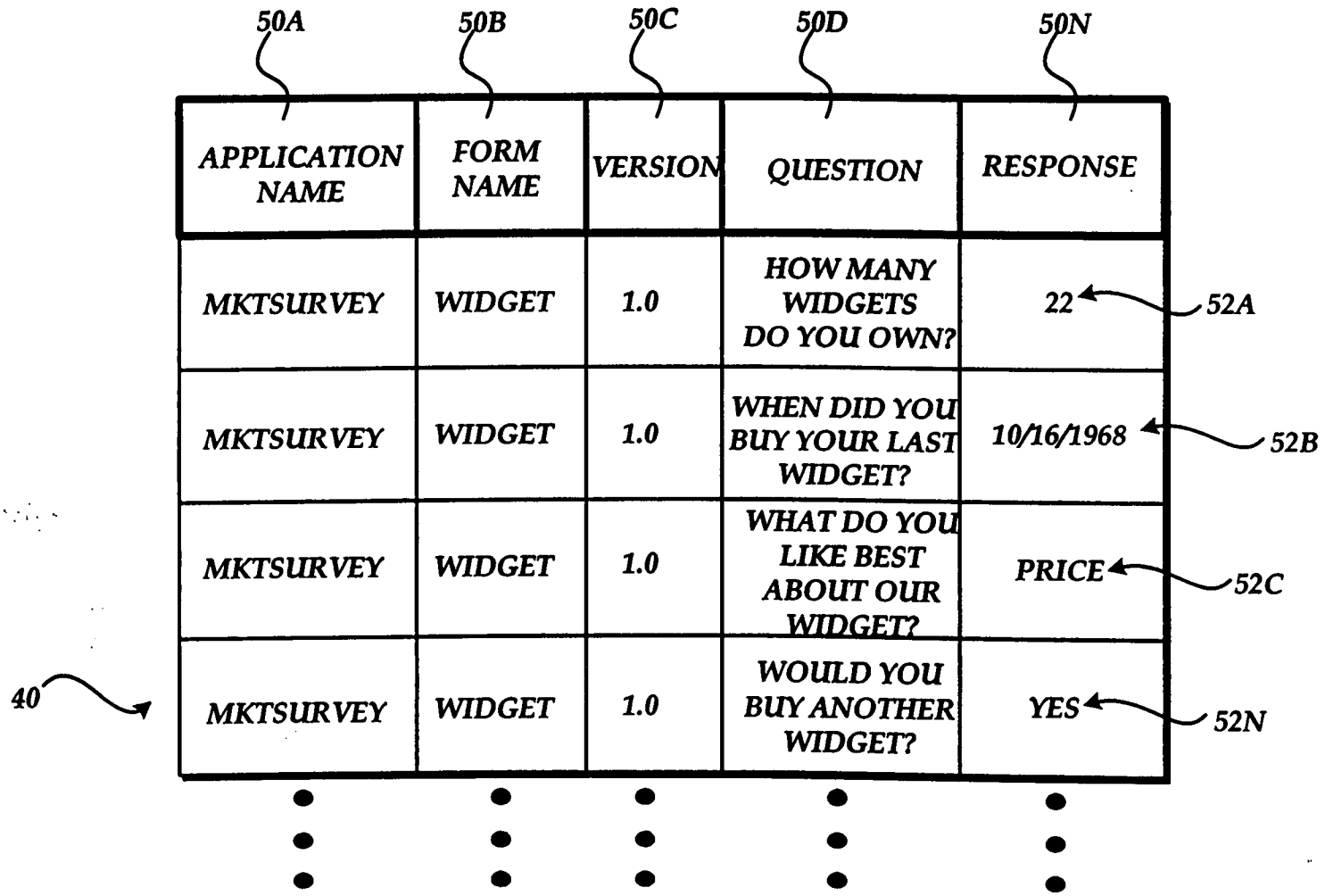
50A
50B
50C
50D
50N
APPLICATION NAME
FORM NAME
VERSION
QUESTION
RESPONSE
MKTSURVEY
WIDGET
1.0
HOW MANY WIDGETS DO YOU OWN?
22
52A
MKTSURVEY
WIDGET
1.0
WHEN DID YOU BUY YOUR LAST WIDGET?
10/16/1968
52B
MKTSURVEY
WIDGET
1.0
WHAT DO YOU LIKE BEST ABOUT OUR WIDGET?
PRICE
52C
MKTSURVEY
WIDGET
1.0
WOULD YOU BUY ANOTHER WIDGET?
YES
52N
40

Fig.5.

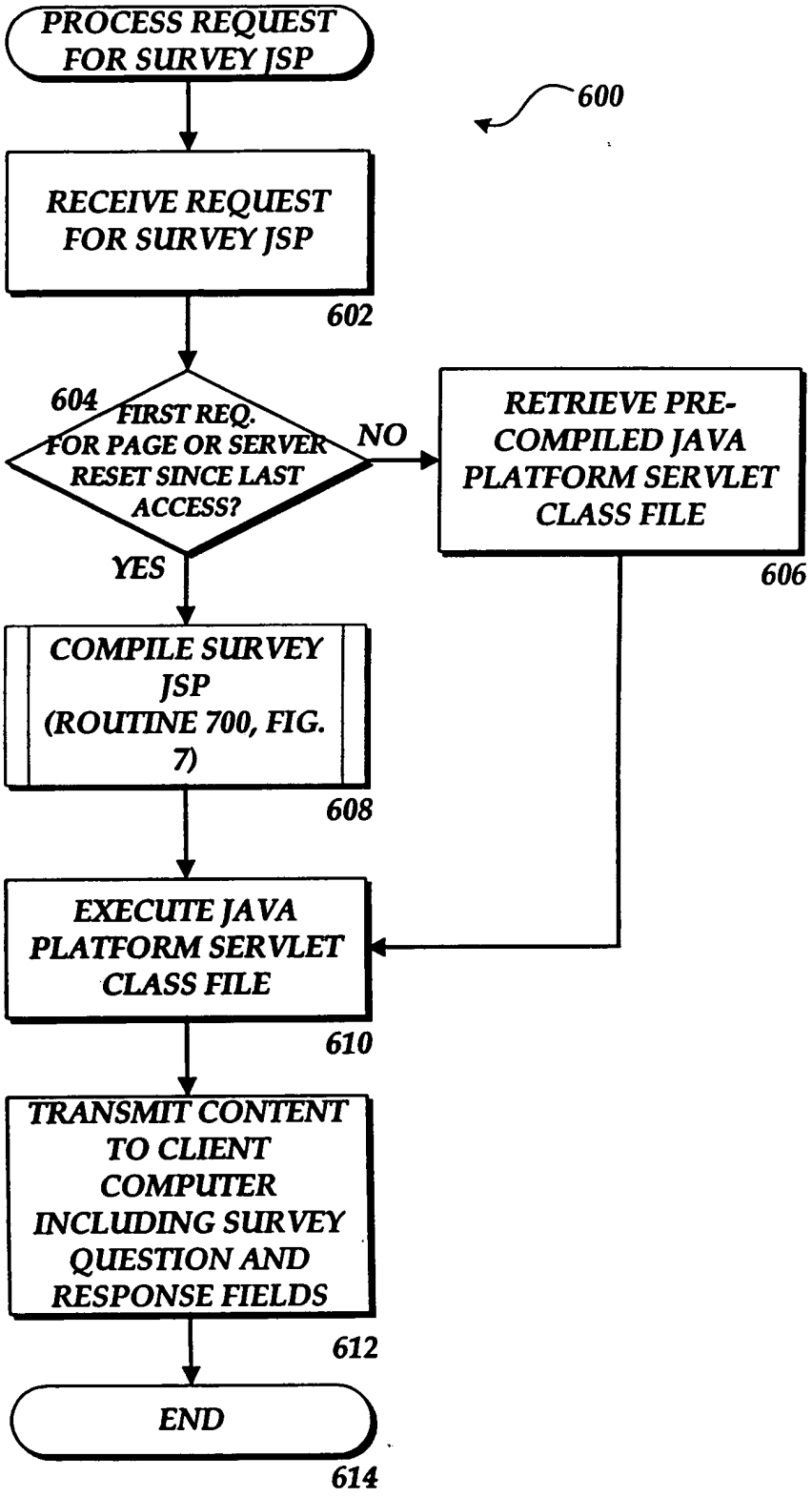
PROCESS REQUEST FOR SURVEY JSP
600
RECEIVE REQUEST FOR SURVEY JSP
602
604
FIRST REQ. FOR PAGE OR SERVER RESET SINCE LAST ACCESS?
NO
YES
RETRIEVE PRE-COMPILED JAVA PLATFORM SERVLET CLASS FILE
606
COMPILE SURVEY JSP (ROUTINE 700, FIG. 7)
608
EXECUTE JAVA PLATFORM SERVLET CLASS FILE
610
TRANSMIT CONTENT TO CLIENT COMPUTER INCLUDING SURVEY QUESTION AND RESPONSE FIELDS
612
END
614

Fig.6.

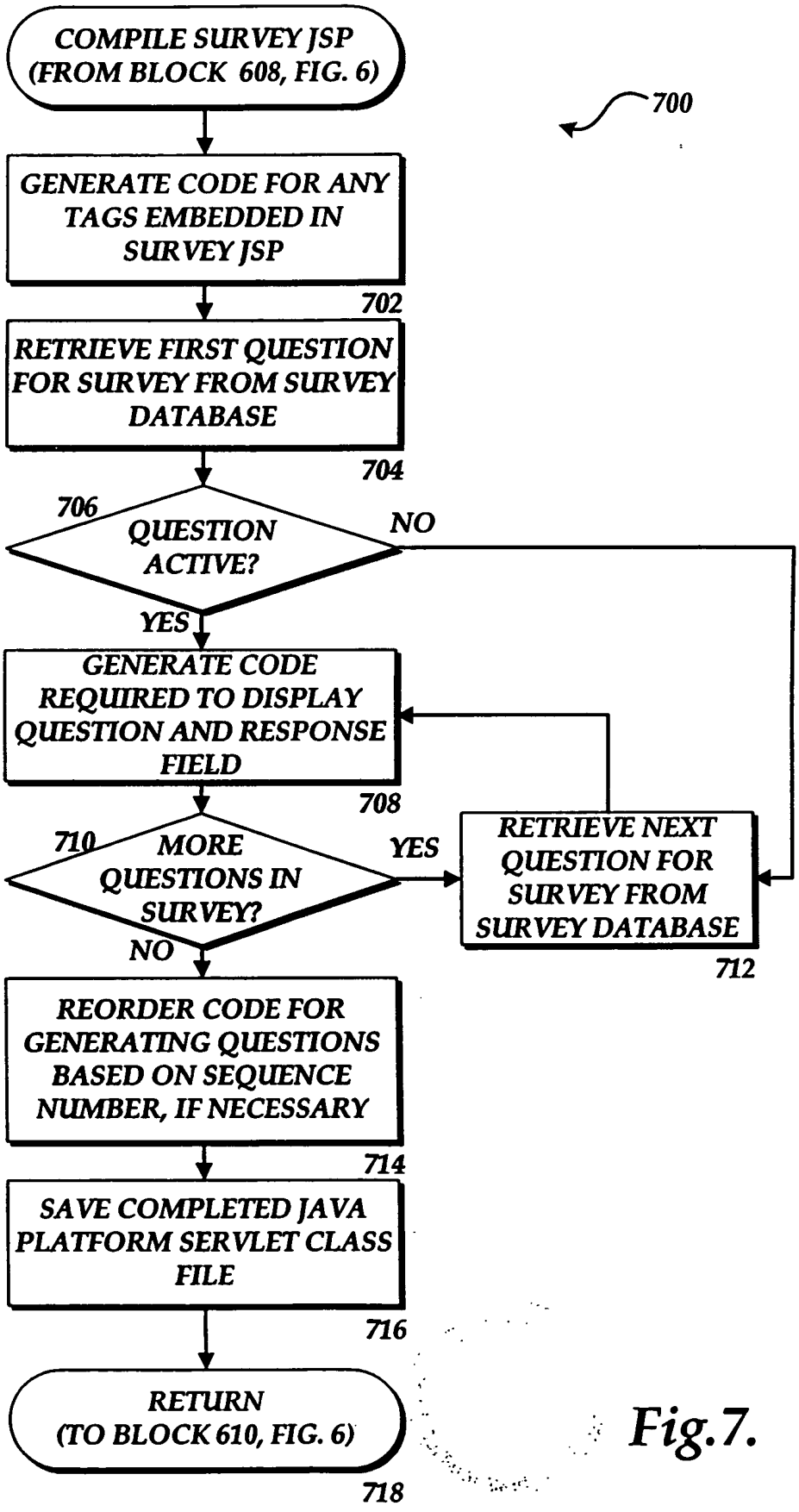
COMPILE SURVEY JSP (FROM BLOCK 608, FIG. 6)
700
GENERATE CODE FOR ANY TAGS EMBEDDED IN SURVEY JSP
702
RETRIEVE FIRST QUESTION FOR SURVEY FROM SURVEY DATABASE
704
706
QUESTION ACTIVE?
NO
YES
GENERATE CODE REQUIRED TO DISPLAY QUESTION AND RESPONSE FIELD
708
710
MORE QUESTIONS IN SURVEY?
YES
RETRIEVE NEXT QUESTION FOR SURVEY FROM SURVEY DATABASE
712
NO
REORDER CODE FOR GENERATING QUESTIONS BASED ON SEQUENCE NUMBER, IF NECESSARY
714
SAVE COMPLETED JAVA PLATFORM SERVLET CLASS FILE
716
RETURN (TO BLOCK 610, FIG. 6)
718

Fig.7.

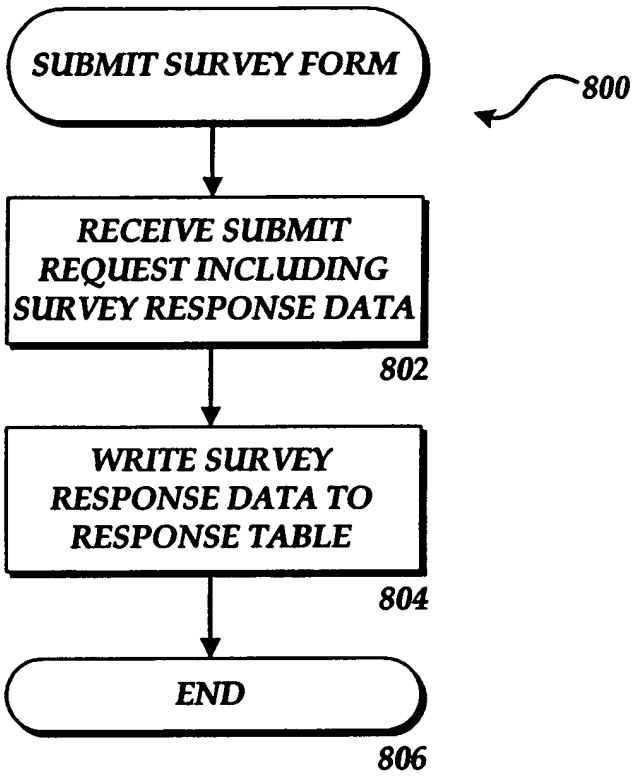
SUBMIT SURVEY FORM
800
RECEIVE SUBMIT REQUEST INCLUDING SURVEY RESPONSE DATA
802
WRITE SURVEY RESPONSE DATA TO RESPONSE TABLE
804
END
806

Fig.8.

Attorney Docket No. 60027.0075US01

MERCHANT & GOULD P.C.

United States Patent Application

COMBINED DECLARATION AND POWER OF ATTORNEY

As a below named inventor I hereby declare that: my residence, post office address and citizenship are as stated below next to my name; that

I verily believe I am the original, first and sole inventor (if only one name is listed below) or a joint inventor (if plural inventors are named below) of the subject matter which is claimed and for which a patent is sought on the invention entitled: *Reusable Online Survey Engine.*

The specification of which
a. ☒ is attached hereto
b. ☐ was filed on as application serial no. and was amended on (if applicable) (in the case of a PCT-filed application) described and claimed in international no. filed and as amended on (if any), which I have reviewed and for which I solicit a United States patent.

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I hereby claim foreign priority benefits under Title 35, United States Code, § 119/365 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on the basis of which priority is claimed:

a. ☒ no such applications have been filed.
b. ☐ such applications have been filed as follows:

FOREIGN APPLICATION(S), IF ANY, CLAIMING PRIORITY UNDER 35 USC § 119			
COUNTRY	**APPLICATION NUMBER**	**DATE OF FILING (day, month, year)**	**DATE OF ISSUE (day, month, year)**
ALL FOREIGN APPLICATION(S), IF ANY, FILED BEFORE THE PRIORITY APPLICATION(S)			
COUNTRY	**APPLICATION NUMBER**	**DATE OF FILING (day, month, year)**	**DATE OF ISSUE (day, month, year)**

I hereby claim the benefit under Title 35, United States Code, § 120/365 of any United States and PCT international application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, § 112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, § 1.56(a) which occurred between the filing date of the prior application and the national or PCT international filing date of this application.

U.S. APPLICATION NUMBER	DATE OF FILING (day, month, year)	STATUS (patented, pending, abandoned)
None		

I hereby claim the benefit under Title 35, United States Code § 119(e) of any United States provisional application(s) listed below:

U.S. PROVISIONAL APPLICATION NUMBER	DATE OF FILING (Day, Month, Year)
None	

I acknowledge the duty to disclose information that is material to the patentability of this application in accordance with Title 37, Code of Federal Regulations, § 1.56 (reprinted below):

§ 1.56 Duty to disclose information material to patentability.

(a) A patent by its very nature is affected with a public interest. The public interest is best served, and the most effective patent examination occurs when, at the time an application is being examined, the Office is aware of and evaluates the teachings of all information material to patentability. Each individual associated with the filing and prosecution of a patent application has a duty of candor and good faith in dealing with the Office, which includes a duty to disclose to the Office all information known to that individual to be material to patentability as defined in this section. The duty to disclose information exists with respect to each pending claim until the claim is canceled or withdrawn from consideration, or the application becomes abandoned. Information material to the patentability of a claim that is canceled or withdrawn from consideration need not be submitted if the information is not material to the patentability of any claim remaining under consideration in the application. There is no duty to submit information which is not material to the patentability of any existing claim. The duty to disclose all information known to be material to patentability is deemed to be satisfied if all information known to be material to patentability of any claim issued in a patent was cited by the Office or submitted to the Office in the manner prescribed by §§ 1.97(b)-(d) and 1.98. However, no patent will be granted on an application in connection with which fraud on the Office was practiced or attempted or the duty of disclosure was violated through bad faith or intentional misconduct. The Office encourages applicants to carefully examine:

(1) prior art cited in search reports of a foreign patent office in a counterpart application, and

(2) the closest information over which individuals associated with the filing or prosecution of a patent application believe any pending claim patentably defines, to make sure that any material information contained therein is disclosed to the Office.

(b) Under this section, information is material to patentability when it is not cumulative to information already of record or being made of record in the application, and

(1) It establishes, by itself or in combination with other information, a prima facie case of unpatentability of a claim; or

(2) It refutes, or is inconsistent with, a position the applicant takes in:

(i) Opposing an argument of unpatentability relied on by the Office, or

(ii) Asserting an argument of patentability.

A prima facie case of unpatentability is established when the information compels a conclusion that a claim is unpatentable under the preponderance of evidence, burden-of-proof standard, giving each term in the claim its broadest reasonable construction consistent with the specification, and before any consideration is given to evidence which may be submitted in an attempt to establish a contrary conclusion of patentability.

(c) Individuals associated with the filing or prosecution of a patent application within the meaning of this section are:

(1) Each inventor named in the application:

(2) Each attorney or agent who prepares or prosecutes the application; and

(3) Every other person who is substantively involved in the preparation or prosecution of the application and who is associated with the inventor, with the assignee or with anyone to whom there is an obligation to assign the application.

(d) Individuals other than the attorney, agent or inventor may comply with this section by disclosing information to the attorney, agent, or inventor.

(e) In any continuation-in-part application, the duty under this section includes the duty to disclose to the Office all information known to the person to be material to patentability, as defined in paragraph (b) of this section, which became available between the filing date of the prior application and the national or PCT international filing date of the continuation-in-part application.

I hereby appoint the following attorney(s) and/or patent agent(s) to prosecute this application and to transact all business in the Patent and Trademark Office connected herewith:

Albrecht, John W.	Reg. No. 40,481	Leonard, Christopher J.	Reg. No. 41,940
Ali, M. Jeffer	Reg. No. 46,359	Liepa, Mara E.	Reg. No. 40,066
Altera, Allan G.	Reg. No. 40,274	Lindquist, Timothy A.	Reg. No. 40,701
Anderson, Gregg I.	Reg. No. 28,828	Lown, Jean A.	Reg. No. 48,428
Batzli, Brian H.	Reg. No. 32,960	Mayfield, Denise L.	Reg. No. 33,732
Beard, John L.	Reg. No. 27,612	McDonald, Daniel W.	Reg. No. 32,044
Berns, John M.	Reg. No. 43,496	McIntyre, Jr., William F.	Reg. No. 44,921
Branch, John W.	Reg. No. 41,633	Mitchem, M. Todd	Reg. No. 40,731
Brown, Jeffrey C.	Reg. No. 41,643	Mueller, Douglas P.	Reg. No. 30,300
Bruess, Steven C.	Reg. No. 34,130	Nelson, Anna M.	Reg. No. 48,935
Byrne, Linda M.	Reg. No. 32,404	Paley, Kenneth B.	Reg. No. 38,989
Campbell, Keith	Reg. No. 46,597	Parsons, Nancy J.	Reg. No. 40,364
Carlson, Alan G.	Reg. No. 25,959	Pauly, Daniel M.	Reg. No. 40,123
Caspers, Philip P.	Reg. No. 33,227	Phillips, John B.	Reg. No. 37,206
Clifford, John A.	Reg. No. 30,247	Pino, Mark J.	Reg. No. 43,858
Cook, Jeffrey	Reg. No. P-48,649	Prendergast, Paul	Reg. No. 46,068
Daignault, Ronald A.	Reg. No. 25,968	Pytel, Melissa J.	Reg. No. 41,512
Daley, Dennis R.	Reg. No. 34,994	Qualey, Terry	Reg. No. 25,148
Daulton, Julie R.	Reg. No. 36,414	Reich, John C.	Reg. No. 37,703
DeVries Smith, Katherine M.	Reg. No. 42,157	Reiland, Earl D.	Reg. No. 25,767
DiPietro, Mark J.	Reg. No. 28,707	Samuels, Lisa A.	Reg. No. 43,080
Doscotch, Matthew A.	Reg No. P-48,957	Schmaltz, David G.	Reg. No. 39,828
Edell, Robert T.	Reg. No. 20,187	Schuman, Mark D.	Reg. No. 31,197
Epp Ryan, Sandra	Reg. No. 39,667	Schumann, Michael D.	Reg. No. 30,422
Glance, Robert J.	Reg. No. 40,620	Scull, Timothy B.	Reg. No. 42,137
Goff, Jared S.	Reg. No. 44,716	Sebald, Gregory A.	Reg. No. 33,280
Goggin, Matthew J.	Reg. No. 44,125	Skoog, Mark T.	Reg. No. 40,178
Golla, Charles E.	Reg. No. 26,896	Spellman, Steven J.	Reg. No. 45,124
Gorman, Alan G.	Reg. No. 38,472	Stewart, Alan R.	Reg. No. 47,974
Gould, John D.	Reg. No. 18,223	Stoll-DeBell, Kirstin L.	Reg. No. 43,164
Gregson, Richard	Reg. No. 41,804	Sullivan, Timothy	Reg. No. 47,981
Gresens, John J.	Reg. No. 33,112	Sumner, John P.	Reg. No. 29,114
Hamer, Samuel A.	Reg. No. 46,754	Swenson, Erik G.	Reg. No. 45,147
Hamre, Curtis B.	Reg. No. 29,165	Tellekson, David K.	Reg. No. 32,314
Harrison, Kevin C.	Reg. No. 46,759	Trembath, Jon R.	Reg. No. 38,344
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Hope, Leonard J.	Reg. No. 44,774	Wahl, John R.	Reg. No. 33,044
Jardine, John S.	Reg. No. P-48,835	Weaver, Paul L.	Reg. No. P-48,640
Johns, Nicholas P.	Reg. No. 48,995	Welter, Paul A.	Reg. No. 20,890
Johnston, Scott W.	Reg. No. 39,721	Whipps, Brian	Reg. No. 43,261
Kadievitch, Natalie D.	Reg. No. 34,196	Whitaker, John E.	Reg. No. 42,222
Kaseburg, Frederick A.	Reg. No. 47,695	Wier, David D.	Reg. No. P-48,229
Kettelberger, Denise	Reg. No. 33,924	Williams, Douglas J.	Reg. No. 27,054
Keys, Jeramie J.	Reg. No. 42,724	Withers, James D.	Reg. No. 40,376
Knearl, Homer L.	Reg. No. 21,197	Witt, Jonelle	Reg. No. 41,980
Kowalchyk, Alan W.	Reg. No. 31,535	Wu, Tong	Reg. No. 43,361
Kowalchyk, Katherine M.	Reg. No. 36,848	Young, Thomas	Reg. No. 25,796
Lacy, Paul E.	Reg. No. 38,946	Zeuli, Anthony R.	Reg. No. 45,255
Larson, James A.	Reg. No. 40,443	Delgado, Marcus	Reg. No. 38,122

I hereby authorize them to act and rely on instructions from and communicate directly with the person/assignee/attorney/firm/ organization who/which first sends/sent this case to them and by whom/which I hereby declare that I have consented after full disclosure to be represented unless/until I instruct Merchant & Gould P.C. to the contrary.

I understand that the execution of this document, and the grant of a power of attorney, does not in itself establish an attorney-client relationship between the undersigned and the law firm Merchant & Gould P.C., or any of its attorneys.

FORM PTO-1595
(Rev. 6-93)
OMB No. 0651-0011 (exp. 4/94)
M&G- 60027.0075US01/BS01302

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PATENTS ONLY

U.S. DEPARTMENT OF COMMERCE
Patent and Trademark Office

To the Commissioner of Patents and Trademarks: Please record the attached original documents or copy thereof.

1. Name of conveying party(ies):

Mark A. Kirkpatrick
Wendy Jennings
Dongbiao Zheng

Additional name(s) of conveying party(ies) attached? ☐ Yes ☒ No

2. Name and address of receiving party(ies):

BellSouth Intellectual Property Corporation
Suite 510, 824 Market Street
Wilmington, Delaware 19801

Additional name(s) & address(es) attached? ☐ Yes ☒ No

3. Nature of conveyance:

☒ Assignment
☐ Security Agreement
☐ Other:
☐ Merger
☐ Change of Name

Execution Date: November 5, 2001

4. Application number(s) or patent number(s):

If this document is being filed together with a new application, the execution date of the application is: November 5, 2001

A. Patent Application No.(s)

B. Patent No.(s)

Additional numbers attached? ☐ Yes ☒ No

5. Name and address of party to whom correspondence concerning document should be mailed:

Name: Leonard J. Hope, Esq.
Address: Merchant & Gould P.C.
P. O. Box 2903
Minneapolis, Minnesota 55402-0903
404.954.5100

6. Total number of applications and patents involved: 1

7. Total fee (37 CFR 3.41): $40.00
☒ Enclosed
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8. Please charge any additional fees or credit any overpayments to our Deposit account number: 13-2725

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9. Statement and signature:

To the best of my knowledge and belief, the foregoing information is true and correct and any attached copy is a true copy of the original document.

Leonard J. Hope	Leonard J. Hope	November 7, 2001
Name of Person Signing	Signature	Date

Total number of pages including cover sheet, attachments, and document: 4

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Commissioner of Patents and Trademarks
Box Assignments
Washington, D.C. 20231

M&G 60027.0075US01/BS01302

ASSIGNMENT

WHEREAS, we, Mark A. Kirkpatrick, residing at 2945 Camary Place Drive, Conyers, GA 30094; Wendy Jennings, residing at 150 North Pond Court, Roswell, GA 30076; and Dongbiao Zheng, residing at 12685 Oxfordshire Court, Alpharetta, GA 30005, are joint inventors of an invention entitled "Reusable Online Survey Engine" as described and claimed in the specification forming part of an application for United States letters patent executed herewith.

AND WHEREAS, BellSouth Intellectual Property Corporation, a corporation organized and existing under and by virtue of the laws of the State of Delaware, and having an office and place of business at Suite 510, 824 Market Street, Wilmington, Delaware 19801 (hereinafter "Assignee") is desirous of acquiring the entire right, title and interest in and to said inventions, improvements and application and in and to the Letters Patent to be obtained therefor;

NOW THEREFORE, to all whom it may concern, be it known that for good and valuable consideration, the receipt and sufficiency whereof is hereby acknowledged, we have sold, assigned, and transferred, and by these presents do sell, assign and transfer unto said Assignee, its successors or assigns, the entire right, title and interest for all countries in and to all inventions and improvements disclosed in the aforesaid application, and in and to the application, all divisions, continuations, or renewals thereof, all Letters Patent which may be granted therefrom, and all reissues or extensions of such patents, and in and to any and all applications which have been or shall be filed in any foreign countries for Letters Patent on the inventions and improvements, including an assignment of all rights under the provisions of the International Convention, and all Letters Patent of foreign countries which may be granted therefrom; and we do hereby authorize and request the Commissioner of Patents and Trademarks to issue any and all United States Letters Patent for the aforesaid inventions and improvements to the Assignee as the assignee of the entire right, title and interest in and to the same, for the use of the Assignee, its successors and assigns.

AND, for the consideration aforesaid, we do hereby agree that we and our executors and legal representatives will make, execute and deliver any and all other instruments in writing including any and all further application papers, affidavits, assignments and other documents, and will communicate to said Assignee, its successors and representatives all facts known to us relating to said improvements and the history thereof and will testify in all legal proceedings and generally do all things which may be necessary or desirable more effectually to secure to and vest in said Assignee, its successors or assigns the entire right, title and interest in and to the improvements, inventions, applications, Letters Patent, rights, titles, benefits, privileges and advantages hereby sold, assigned and conveyed, or intended so to be.

AND, furthermore we covenant and agree with said Assignee, its successors and assigns, that no assignment, grant, mortgage, license or other agreement affecting the rights and property herein conveyed has been made to others by us and that full right to convey the same as herein expressed is possessed by us.

IN TESTIMONY WHEREOF, I have hereunto set my hand this 5th day of November, 20 01

Mark A. Kirkpatrick

STATE OF GA)
) ss.
COUNTY OF Gwinnett)

On this 5 day of November, 2001, before me personally appeared Mark A. Kirkpatrick to me known and known to me to be the person described in and who executed the foregoing instrument, and she duly acknowledged to me that he executed the same for the uses and purposes therein set forth.

[SEAL]

Amy Yurais
Notary Public

Notary Public, Fulton County, Georgia
My Commission Expires March 14, 2004

IN TESTIMONY WHEREOF, I have hereunto set my hand this 5th day of November, 2001.

Wendy Jennings

STATE OF Georgia)
) ss.
COUNTY OF Gwinnett)

On this 5 day of November, 2001, before me personally appeared Wendy Jennings to me known and known to me to be the person described in and who executed the foregoing instrument, and she duly acknowledged to me that he executed the same for the uses and purposes therein set forth.

[SEAL]

Amy Yurais
Notary Public

Notary Public, Fulton County, Georgia
My Commission Expires March 14, 2004

IN TESTIMONY WHEREOF, I have hereunto set my hand this 5th day of November, 2001.

Dongbiao Zheng

STATE OF GA)
) ss.
COUNTY OF Gwinnett)

On this 5 day of November, 2001, before me personally appeared Dongbiao Zheng to me known and known to me to be the person described in and who executed the foregoing instrument, and she duly acknowledged to me that he executed the same for the uses and purposes therein set forth.

[SEAL]

Amy Yuris
Notary Public

Notary Public, Fulton County, Georgia
My Commission Expires March 14, 2004